

3 Digital transformation in education: from vision to practice during the pandemic

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Abstract

This contribution addresses the challenges brought on by the pandemic and argues that a forced acceleration in online teaching and assessment practices can become a sustainable model for the post-COVID-19 world. Technology is a great asset that provides learning opportunities for the whole community and the education sector should seek to adopt an innovative approach that *firmly* integrates face-to-face with virtual interaction. The effort to make the most of an unforeseen and challenging situation has brought Jisc's prediction for future learning forward: our publication *Education 4.0 Transforming the future of education through advanced technology*, offers suggestions on how this can be achieved in the current climate.

Keywords: online teaching, assessment, advanced technology, Jisc.

In March 2020, every college and university in the United Kingdom (UK) moved from almost entirely face-to-face, on-campus teaching, to fully online. In the space of three weeks, a centuries' old model was turned on its head, ready for a new term. In many ways this was an amazing success – students were being taught *en masse*, had access to most of what they needed, and were able to be assessed. Degrees were awarded and students graduated². Lecturers who had been resisting the incessant march of technology were online with Microsoft Teams or Zoom with their students. Many lecturers found great new ways of

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2. <https://www.universitiesuk.ac.uk/news/Pages/national-graduates-day-2020.aspx>

How to cite: Feldman, P. (2021). Digital transformation in education: from vision to practice during the pandemic. In A. Plutino & E. Polisca (Eds), *Languages at work, competent multilinguals and the pedagogical challenges of COVID-19* (pp. 39-45). Research-publishing.net. <https://doi.org/10.14705/rpnet.2021.49.1216>

using these technologies to interact with students, to enable them to interact amongst themselves, and to really enhance their traditional teaching. We have heard of really great lecturing happening in this brave new world.

The alternative does not bear thinking about, the loss of the summer term, finalists being caught in some form of limbo etc... So, in the round we must congratulate the sector on rising to the challenges flung at it in the face of the worst crisis in most of our lifetimes. However, let us not kid ourselves that our disaster response represents a move to great online teaching. I do worry that the ‘make do and mend’ is seen as the way things should be. And this should not be a surprise, nor taken as a criticism. The vast majority of lecturers did not have experience of good online teaching, so they are learning as they go along. One of my favourite stories (hopefully apocryphal) is of the lecturer who wanted to scan his acetates to use for his online lectures! Many lecturers did their best to replicate their in-person teaching and were proud of what they did; however, unfortunately, great online teaching needs to be different. Very encouragingly, most institutions worked hard over the summer and the quality of ‘online’ teaching has grown significantly for the 2020/2021 academic year.

One of the complications we faced was online assessment. Prophetically, Jisc released a thought piece calling for a rethink of assessment³ just before the pandemic. As students experience more flexible teaching and as the digital world intrudes ever more on the physical world (so making cheating increasingly easy and harder to spot), we see many challenges to physically present assessment and potentially less need for it. With high-stakes exams comes the need for high-quality invigilation. As we saw, when physical presence was not possible, every institution globally had to rethink how it was going to test securely; can/should this prove the start of the end of high-stakes exams? How do we build on this to accelerate what should be better ways of approaching the issue?

In the summer, students who had signed up for an on-campus, face-to-face experience were wondering why they were paying such high fees. Instead of

3. <https://www.jisc.ac.uk/reports/the-future-of-assessment>

being with mates, enjoying their summer term, and the occasional lecture and exams, they were back with their parents trying to get enough bandwidth to be able to do their assignments. I heard from my own nephew that he had to get up in the middle of the night to be able to have a clear enough run at downloading his project materials; a story repeated up and down the country. We have seen those concerns continue in the new academic semester (2021/2022) with the potential for a high level of dropouts given the mismatch of students' expectations and the reality of the COVID-19 world.

Jisc had been forming an exciting vision of how teaching and learning could be in the mid-2030s with the report on *Education 4.0 Transforming the future of education through advanced technology*⁴. As Jisc chief executive officer, I have been part of a team predicting the move to machine/self-directed personalised, adaptive learning, and inbuilt assessment, with face-to-face seminars. We saw our 15-year vision become, in some sense, the way things are done in 15 days (excuse the creative licence). Of course, what we are seeing is only a part of our vision, but directionally there has been a shift to make it a reality.

There is a widespread belief in university leadership, both in the UK and globally, that we must take the best out of this crisis and a determination not to return to how things were. This mirrors the much-parroted phrase to 'build back better'. Behind this is a universal belief that the crucible of necessity has forged an understanding that things can be different and that the difference works, so let us take something good out of the awfulness of the crisis.

Fortunately, few people want to adopt a purely virtual model, which we wholeheartedly agree with. Our education 4.0 vision is one where humanity prevails, where technology takes away the mundane, repeatable work, and people are freed up to interact, to discuss and debate, to challenge, and to learn together. So no more sitting in large lecture theatres purely listening (as a caricature). Instead, spending time in more tutorial/seminar settings and really getting beneath the knowledge that can adequately be imparted virtually. We

4. <https://www.jisc.ac.uk/education-4-0>

suggest institutions should adopt more active-based learning in embedding the online teaching, as well as enhancing students' skills and capabilities. There has been a narrative for some time that we need to give our students the 'soft' skills and the digital skills they will need in their careers, and these new models of pedagogy give that opportunity to make this happen faster and better.

While the essence of the vision is happening now – the fundamental change in the way teaching happens – key technologies that we predict are needed for the full impact are not yet ready for Higher Education (HE), in particular the use of AI (Artificial Intelligence) and mixed reality. In both these cases there are opportunities to try and learn using them now, but we need further generations of advances to happen in the capability of machine learning for AI to be able to be anywhere close to 'tutoring' a student; at the same time, on mixed reality we need much lower price points for the high-quality experience that would be needed to make it 'the norm'.

So, 2021/2022 is seeing a wide range of hybrid teaching and learning models, e.g. live lectures with both in-person and online students. We expect this to continue at least until summer 2022. One of my fears, as an optimist who hopes that good will come from the crisis, is how to embed this change. The status quo has survived hundreds of years and, once social distancing is no longer needed, it would be easier to snap back to the past to a place that 'works' rather than to persevere and build better (and we do believe that it will be better for students). Jisc is working hard to mitigate this risk!

So, what do universities need to do to improve the chance of getting a high-quality teaching student experience? A key element is to give our teaching staff the skills they need to do it well. Learning technologists had gained a good sense of what works and this has been tested in the white-hot forge of necessity in recent months. Jisc and Universities UK (UUK) are leading a highly collaborative exercise across the UK which HE called Learning & Teaching Reimagined⁵. This collaboration informed practice for the remainder

5. <https://www.jisc.ac.uk/learning-and-teaching-reimagined>

of 2020/2021, while providing key recommendations to make 2021/2022 the first of a revised and improved future of education, all within the context of a sector-leader-driven 2030 vision. I encourage you to look at the reports and the synthesis of survey findings (of students, staff, and leaders) which make fascinating reading.

At Jisc, we are prioritising our work to address these recommendations so that capacity is in place when institutions need it as the future unfolds.

It is crucial that we make the lessons we have learnt widely available and encourage adoption of revised principles by our lecturers. In some senses our recommendations should not be a surprise and I cover many of them in this piece. One we would particularly point you to in the report is to work with your students and get them to help shape the learning experiences.

A key need we are seeing widely demanded is for a step change in the skills of all university staff. This is a trend we have seen emerging strongly in recent years and the pandemic has accelerated the need. For example, our annual digital insights survey⁶ pre-crisis indicated that 74% of staff did not teach online, and only 20% gave personalised digital feedback. Academic staff have done what was needed, now we need to give them the skills, knowledge, and experience they need to be great teachers in our ‘new normal’ world. We need examples of best practice and training in how best to use the tools at our disposal to teach our students.

Back to content, however. The UK’s further education world is very comfortable working as a sector to develop content for teaching purposes – they do see their difference being in the overall student experience. We see less appetite for this in HE globally. We do believe the sector should collaborate and build seminal online teaching materials and digital artefacts at an affordable price and in a maintainable way. (Note: this is not a ‘back to the future’ call for open educational resources, there needs to be a sustainable financial model).

6. <https://www.jisc.ac.uk/digital-experience-insights>

This is particularly true for mixed reality. While realising the full potential of this is some way off, there are many areas where it is making a difference already, especially in ‘vocational’ spaces. Where space on campus is in short supply or access to labs is a precious commodity, can we use virtual reality, for example, to replicate the learning and maintain our students’ pace of teaching? If so, the cost of production of credible content is so high that it probably needs consortia to make it viable.

While students have found it quite difficult to maintain engagement watching a ‘Zoom’ lecture, we have seen great examples of lecturers and students using the ‘chat’, and Q&A functions to generate a higher level of interaction than generally happened in lectures. There are pros and cons to this: are the students paying more attention to each other than the lecture, for example; behaviour that would not be acceptable in a live lecture (talking to each other loudly) is an expectation for many students when it is online. Also, when the lecture is not live (which in many spaces is the right thing to do), then human interaction is not as effective (or if it is not watched simultaneously, even possible). So, we see a key need to introduce ways for students to explore these subjects together online, especially in the coming year when on-campus time and space is at a premium.

We also need to return to the question of assessment. Much assessment happened in a ‘just do it’ way in 2019/2020. This is not sustainable in a ‘new normal’ model. We need a key debate on what assessment means in a digital world and how to do it well: our report⁷ is a good starting point.

All the discussion above is, by and large, discipline agnostic; but we must not ignore the specialists’ needs. The creative arts, due to their inherent physicality have experienced critical issues where we need to find solutions (e.g. how do you examine a music student online, or how do you enable drama performances with students socially distancing when even the BBC cannot keep; such as *The Archers* going as an ensemble?). Science and engineering students need access to labs and specialist equipment; much of this learning is done as project teams.

7. <https://www.jisc.ac.uk/reports/the-future-of-assessment>

And so on. All of which just underlines the challenges facing us, but what a great prize at the end!

Put this all together and institutions, and to an extent the HE sector as a whole, need to develop visions for their 'new normal' way of teaching, a vision for its digital transformation, and building on what is happened. This can be different for each university; we certainly do not want to see a homogenising of the student experience. We have a rich panoply of institutions in the UK that are exciting and drive innovation, so it is essential each organisation designs for their culture and key energising strengths.

We are living through an inflection point in history at the moment. It is in our hands to come out of this better, stronger, and with a clear path to a new way; we encourage all of you to grab the opportunity to build the HE sector for the future that our students deserve.



Published by Research-publishing.net, a not-for-profit association
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Languages at work, competent multilinguals and the pedagogical challenges of COVID-19
Edited by Alessia Plutino and Elena Polisca

Publication date: 2021/02/26

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Typeset by Research-publishing.net
Cover layout by © 2021 Raphaël Savina (raphael@savina.net)

ISBN13: 978-2-490057-83-2 (Ebook, PDF, colour)

ISBN13: 978-2-490057-84-9 (Ebook, EPUB, colour)

ISBN13: 978-2-490057-82-5 (Paperback - Print on demand, black and white)

Print on demand technology is a high-quality, innovative and ecological printing method; with which the book is never 'out of stock' or 'out of print'.

British Library Cataloguing-in-Publication Data.

A cataloguing record for this book is available from the British Library.

Legal deposit, France: Bibliothèque Nationale de France - Dépôt légal: février 2021.